March 18, 1924. 1,487,375

C. H. FUCHS

WIPING ATTACHMENT FOR FILM DRYING APPARATUS

Filed April 12, 1922

Fig. 1.

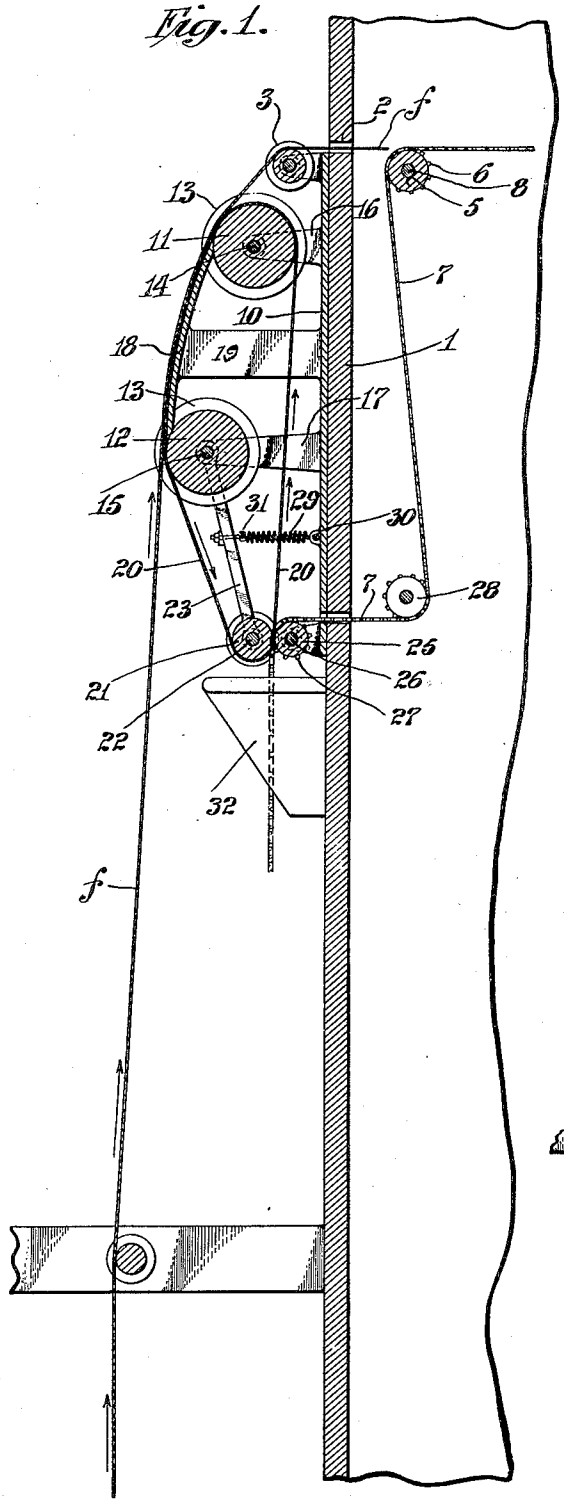


Fig. 2.

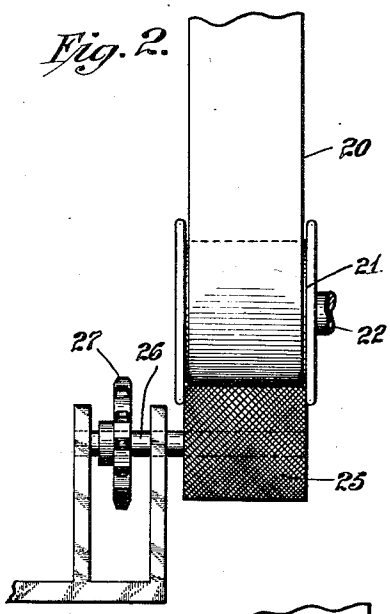
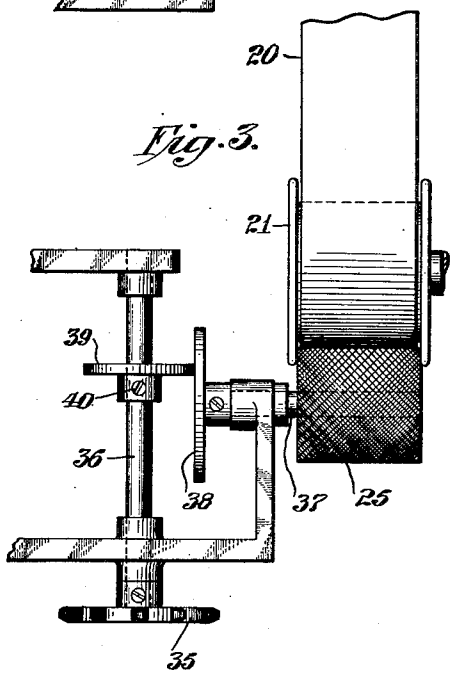


Fig. 3.



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UNITED STATES PATENT OFFICE.

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WIPING ATTACHMENT FOR FILM-DRYING APPARATUS.

Application filed April 12, 1922. Serial No. 551,878.

To all whom it may concern:

Be it known that I, CAMILLE HENRI FUCHS, a citizen of the Republic of France, and resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Wiping Attachments for Film-Drying Apparatus, of which the following is a specification.

This invention relates to the art of drying motion picture film after it has been subjected to the usual developing process and consists of an auxiliary wiping means or mechanism advantageously interposed between the washing tanks and the drying machines or cabinets of the standard forms of film developing apparatus. The purpose of my present improvements is to effect a mechanical wiping or drying of the film preparatory to the further drying thereof within the drying cabinet so as to remove from the surface of the film any accumulated moisture or particles of liquid or other foreign matter adhering thereto. This initial wiping of the film surface is particularly desirable in avoiding marking or spotting of the film as commonly experienced where the conditions permit of the liquid particles being carried within the drying cabinet wherein upon evaporation there is left, to more or less degree, a visible condensate.

My improved wiping mechanism for the purpose described is designed to possess important advantages over the customarily employed wiping pads which become saturated and in consequence ineffective which necessitates their frequent renewal with objectionable interruption to the desired continuous operation. The improved device of my invention accordingly employs a wiping belt of chamois or other suitable absorbent material in an arrangement providing for a substantial area of wiping engagement with the film and to further permit of the desired continuous operation. To this end an endless wiping belt is suitably positioned in contact with the film surface to be acted upon and is driven to obtain the desired rate of movement of the film thereover, provision being further made for the continuous removal of the accumulated or excessive moisture from the belt.

The described and other features and advantages of my improved mechanism will be understood by reference to the accompanying drawings wherein like reference numerals are applied to the corresponding parts in the several views.

In the drawings:

Fig. 1 is a view in side elevation illustrating the features of my invention associated with the drying cabinet, partially shown in section.

Fig. 2 is a partial plan view illustrating the method of driving the wiping belt.

Fig. 3 is a similar view illustrating a desirable modified arrangement having provision for conveniently regulating the rate of movement transmitted to the wiping belt.

In the approved embodiment of my invention, as here illustrated, the improved wiping mechanism is incorporated with the usual drying cabinet as an attachment thereto, the arrangement being such that the wiping is effected immediately in advance of the film entering the drying machine. In the construction shown, 1 indicates the front vertical wall of the drying machine, 2 the entry opening therethrough for the passage of the film *f* into the cabinet, wherein it is fully dried by evaporation. 3 indicates the usual journalled guide spool for the guiding of the film into the drier as it passes upwardly from the final washing in the developing apparatus (not shown). At 5 is shown a suitably journalled driving spool provided with sprocket teeth 6 for the entrainment of the film, the feed movement being transmitted to the driving spool 5 by means of a drive chain 7 engaging a suitable sprocket upon the spool shaft 8, as is readily understood.

In accordance with my invention and as illustrated, a suitable bracket 10 is secured to the outer face of the wall 1 of the drying machine. Upon the bracket there are journalled upper and lower idler rollers or spools 11 and 12 provided with the usual projecting guide flanges 13, 13 spaced to receive between them the film strip. The idler spools 11 and 12 are journaleled upon bearing shafts 14 and 15 carried by the outwardly projecting arms 16 and 17 of the bracket member 10. The wiping or drying element is indicated at 20 in the form of an endless belt of chamois, felt or other suitable absorbent material. This belt is carried at its upper end upon the spool 11, is passed over the spool 12 and at its lower end is fitted upon a spool 21. The latter is journalled at 22 upon a bearing stud carried by

the pivotally supported arm 23 and fitted upon the stud or shaft 15 at its upper end.

In the arrangement of Figs. 1 and 2, provision is made for driving the drying belt whereby the portion thereof in engagement with the film, will be moved in the reverse direction to the movement of the film. This is accomplished by means of a driven spool 25 journalled upon a bearing stud 26 suitably supported upon the bracket 10. This driving spool 25 may desirably be rotated by means of the chain 7 engaging a sprocket 27 secured to the spool, the chain 7 being, as shown, carried inwardly and over an idler sprocket 28 and thence over the sprocket 5. The spool 25 is journalled in substantially the horizontal plane of the spool 21 and the method of driving is by the frictional engagement of the spool 25 with the belt 20 which is interposed between the spools 21 and 25 and held under compression against the latter under the influence of a retractile spring 29 connected to an eyelet 30 of the bracket 10 and at its other end attached to an adjustable eyelet 31 secured to the pivoted arm 23. As indicated in Fig. 2, the peripheral surface of the driving spool 25 may desirably be serrated or otherwise suitably roughened thereby more effectively to entrain the belt in the transmission of motion thereto.

Suitably supported in a position intermediate of the spools 11 and 12 there is provided, as shown, a curved bearing plate 18 disposed within the normal path of the belt so as to deflect the belt to travel or slide over its convex surface engaging the inner surface of the belt, as shown, there is thereby obtained an intimate or close contact and engagement between the opposed surfaces of the film and belt intermediate of the rollers 11 and 12 thereby providing an elongated area of active wiping surface. The curved bearing plate 18, as indicated, is desirably supported by means of extension arms 19 from the bracket 10.

The disclosed arrangement thus provides an endless, driven belt positioned in the path of the film whereby, in its travel to the guide spool 3, the film is caused to travel or ride over an extended length of the drying belt with their opposed surfaces in intimate contact whereby the relatively reversed movement therebetween will produce a wiping drying action upon the film surface in a manner well adapted for removing any particles of moisture therefrom and from within the usual film perforations. In addition to the desired wiping action the described operation will further and to a desirable degree polish the film surface.

The pressure imparted by the spring 29 and the arrangement of the spools 21 and 25 is such that the compression of the drying belt 20 between the spools 21 and 25 will operate as a wringer continuously to expel and remove excess moisture from the drying belt. A suitable receptacle 32 is desirably positioned beneath the spools 21 and 25 to receive the discharged liquid. It will be noted that the construction provides an enlarged area of active wiping or drying surface from which it results that in operation the removal of the adhering liquid is very thoroughly accomplished and moreover this operation is permissibly continuous.

While I have described, and shown in Figs. 1 and 2, an approved embodiment of the features of my invention it will be understood that the same is subject to various modification. As an illustration thereof, I have shown in Fig. 3 a modified arrangement of the driving parts wherein additional means are incorporated for conveniently regulating or adjusting the rate of motion imparted to the drying belt whereby the relative movement of the film and the belt may be determined to obtain the results desired. In this latter construction the rotation of the belt driving spool 25 is effected from a suitable driving sprocket 35 fixed upon a journalled shaft 36 from which the motion is transmitted to the spool 25 through adjustable gearing. As shown, the spool 25 is fixed upon a suitably journalled rotating shaft 37 arranged at right angles to the shaft 36 and having affixed to its inner end a driving disc or gear member 38 frictionally engaged by a coacting gearing disc 39 secured to shaft 36 by a set screw 40. The disc 39 is adjustable longitudinally on the shaft 36 determining the gearing ratio and resulting rate of movement imparted to the driving belt.

Having described my invention I claim:

1. A mechanical wiping attachment for film drying machines comprising an endless drying belt supported to engage the film, means for driving the drying belt with a relative movement between the belt and film and means operative continuously to remove excess moisture from the belt.

2. A mechanical wiping attachment for film drying machines comprising an endless drying belt supported to have an elongated surface engagement with the film, means for driving the drying belt with a relative movement between the belt and film and means operative continuously to remove excess moisture from the belt.

3. A mechanical wiping means for motion picture film arranged for use in combination with developing apparatus and the drying cabinet associated therewith and interposed therebetween, comprising an endless drying belt supported to have an elongated surface engagement with the film in its passage from the developing apparatus to the drying cabinet, means for driving the drying belt with a relative movement between the

belt and film in a continuous operation and means adapted to expel the accumulated or excess moisture from the drying belt.

4. A mechanical wiping means for motion picture film arranged for use in combination with developing apparatus and the drying cabinet associated therewith and interposed therebetween, comprising an endless drying belt supported to have an elongated surface engagement with the film in its passage from the developing apparatus to the drying cabinet, means for driving the drying belt in a reverse direction to the movement of the film and in a continuous operation and means adapted to expel the accumulated or excess moisture from the drying belt.

5. A mechanical wiping attachment for motion picture film drying machines comprising suitably journalled supporting spools an endless drying belt of absorbent material supported upon the spools in position to have an elongated surface in contact with the film entering the drying machine, said spools being in substantially superimposed relation, a driven spool suitably journalled adjacent the lowermost of the belt carrying spools, said lowermost spool being movably supported and resilient means arranged to act thereon to move said spool under pressure toward the driven spool whereby the belt is compressed therebetween to be driven by frictional engagement and whereby the accumulated liquid will be expelled therefrom.

6. A mechanical wiping attachment for motion picture film drying machines comprising suitably journalled supporting spools, an endless drying belt of absorbent material supported upon the spools in position to have an elongated surface in contact with the film entering the drying machine, said spools being in substantially superimposed relation, a driving spool suitably journalled adjacent the lowermost of the belt carrying spools and having its axis parallel thereto in substantially the horizontal plane thereof, said lowermost spool being movably supported and resilient means arranged to act thereon to move said spool under pressure toward the driven spool whereby the belt is compressed therebetween to be driven by frictional engagement and whereby the accumulated liquid will be expelled therefrom and means operative to rotate the driving spool for moving the belt reversely with relation to the film.

7. A mechanical wiping attachment for film drying machines comprising suitably journalled supporting spools, an endless drying belt of absorbent material carried by the spools, a curved bearing plate supported intermediate of the belt carrying spools and adapted to coact therewith to support the drying belt in position to have an elongated surface of engagement with the film, means for driving the drying belt with a relative movement between the belt and film and means operative continuously to remove excess moisture from the belt.

8. A mechanical wiping attachment for motion picture film drying machines, comprising suitably journalled supporting spools, an endless drying belt of absorbent material supported upon the spools, a curvilinear bearing plate suitably supported to project within the normal path of the film and engaging the belt to position it to have an elongated surface contact with the film entering the drying machine, a driven spool suitably journalled adjacent the lowermost of the belt carrying spools, said lowermost spool being movably supported and means resiliently acting upon the said spool to act under pressure against the driven spool whereby the belt is compressed therebetween to be driven by frictional engagement and whereby the accumulated liquid will be expelled therefrom.

Signed at New York, in the county of New York and State of New York, this 10th day of March, A. D. 1922.

CAMILLE HENRI FUCHS.